

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Floor tile.
- .2 Related Sections:
 - .1 Section 03 30 00 – Cast - In - Place Concrete
 - .2 Section 07 92 00 - Joint Sealants.

1.2 REFERENCE STANDARDS

- .1 American National Standards Institute (ANSI).
 - .1 ANSI A108/A118/A136.1:2018, American National Specifications For The Installation of Ceramic Tile.
 - .2 ANSI A118.3-2018, Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.
 - .3 ANSI A118.4-2018, Latex Cement Mortar.
 - .4 ANSI A118.5-2018, Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation.
 - .5 ANSI A118.6-2018, Ceramic Tile Grouts.
- .2 American Society for Testing and Materials International (ASTM).
 - .1 ASTM C144-18, Standard Specification for Aggregate for Masonry Mortar.
 - .2 ASTM C207-18, Standard Specification for Hydrated Lime for Masonry Purposes.
 - .3 ASTM C847-18, Standard Specification for Metal Lath.
 - .4 ASTM C979 / C979M-16, Standard Specification for Pigments for Integrally Colored Concrete.
- .3 Canadian Standards Association (CSA Group).
 - .1 CAN/CSA-A3000-13(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .4 Terrazzo Tile and Marble Association of Canada (TTMAC).
 - .1 TTMAC Specifications Guide 09 30 00 Tile Installation Manual 2018-2019.
 - .2 Hard Surface Maintenance Guide, Latest Edition.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Preinstallation Meeting: Conduct conference at Project site.
 - .1 Review requirements in ANSI A108.01 for substrates and for preparation by other trades.
 - .2 Conduct meeting with Consultant, concrete and tiling subtrades to review procedures and scheduling for coordination of slab sawcut and tiling control joints.
- .2 Sequencing and Scheduling:
 - .1 Proceed with tile work only after curbs, vents, drains, piping, and other projections through substrate have been installed, and when substrate construction and framing of openings have been completed.
 - .2 Submit Product Data and Samples for Consultant review and selection with sufficient lead time to accommodate dry-placement activities to occur for concrete slab sawcut coordination.

1.4 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
 - .1 Product data:
 - .1 Include manufacturer's information on:
 - .1 Porcelain floor tile, marked to show each type, size, and shape required.
 - .2 Mortar and grout.
 - .3 Divider strip.
 - .4 Slip resistant tile.
 - .5 Accessories
 - .2 Samples:
 - .1 Samples for Initial Selection: For each type of grout indicated. Include Samples of accessories involving colour selection.
 - .2 Submit duplicate 300 by 600 mm sample panels of each colour, texture, size, and pattern of tile. Adhere tile samples to 12 mm thick plywood and grout joints to represent project installation.
 - .3 Informational Submittals:
 - .1 Manufacturer's installation instructions and recommendations.

1.5 CLOSEOUT SUBMITTALS

- .1 Maintenance Data:
 - .1 Submit maintenance data for incorporation into Operations and Maintenance Manual in accordance with Section 01 78 00 – Closeout Submittals.
 - .2 Submit cleaning and maintenance recommendations for Owner's use.
 - .3 Submit TTMAC Maintenance Guide. Provide specific warning of any maintenance practice or materials that may damage or disfigure finished work.

1.6 MAINTENANCE MATERIALS SUBMITTALS

- .1 Supply extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents:
 - .1 Tile: Supply minimum 5% or one full carton (whichever is greater) of each type and colour of tile required for project for maintenance use. Store where directed.

1.7 QUALITY ASSURANCE

- .1 Installer Qualifications: skilled mechanics trained and experienced in tile work. Installation firm registered as member in good standing with TTMAC, and a member for minimum past 5 years.
 - .2 Source Limitations for Tile: Obtain tile of each type and colour or finish from one source or producer.
 - .1 Obtain tile of each type and colour or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
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- .3 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- .4 Quality Assurance Submittals:
 - .1 Manufacturer's Instructions: manufacturer's installation instructions.
 - .2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A108/A118/A136.1 for labeling tile packages.
- .2 Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- .3 Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- .4 Store liquid materials in unopened containers and protected from freezing.
- .5 Waste management and disposal requirements: Refer to Section 01 74 20 – Construction / Demolition Waste Management and Disposal.

1.9 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.8 MAINTENANCE

- .1 Extra Materials:
 - .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
 - .3 Maintenance material same production run as installed material.

Part 2 Products

2.1 PRODUCTS, GENERAL

- .1 ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A108/A118/A136.1 for types, compositions, and other characteristics indicated.
 - .2 ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
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- .3 Factory Blending: For tile exhibiting colour variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colours as those taken from other packages and match approved Samples.

2.2 FLOOR TILE

- .1 Porcelain tile: to ANSI A108/A118/A136.1, Type 4, Class MR 1 (<0.5%).
 - .1 Composition: through-body porcelain.
 - .2 Grout Colour: Colour to match tile. Present matching option Consultant from manufacturer's standard range for approval.
 - .3 Chemical Resistance: resistance to household chemicals.
 - .4 Stain Resistant.

Acceptable Products:

CT-1:

- .1 Manufacturer: Olympia Tile.
- .2 Collection: Colors Series.
- .3 Colour: UQ.CO.WHT.2424.MT.
- .4 Size: 600 mm x 600 mm (24" X 24").

CTB-1:

- .1 Wall base: Same as CT-1.
- .2 Cut full tiles to 100 mm x 600 mm (4" X 24") cap with Schluter strip.

- .5 Grout Colour: Colour to match tile. Present matching option to Consultant for approval from manufacturer's standard range.

2.3 MORTAR AND GROUT MATERIALS

- .1 Mortar and grout materials: product of a single manufacturer to CSA A3000, type GU.
 - .1 Acceptable manufacturers: Flextile Ltd., Laticrete International, Inc., Mapei Corporation; Custom Building Products.
- .2 Sand to ASTM C144, passing 16 mesh.
- .3 Hydrated lime to ASTM C207, Type N.
- .4 Latex additive: formulated for use in cement mortar and thin set bond coat.
- .5 Thin-Set Mortar: polymer-enriched, non-sag medium-bed and thin-set mortar specifically for use with large format tile, to ANSI A118.4 and ANSI A118.11, recommended by setting material manufacturer. Use white mortar for mosaic tile.
 - .1 Standard of Acceptance: Mapei Ultraflex LFT, or comparable product in compliance with specified requirements, by one of the following: Flextile Ltd., Laticrete International; Custom Building Products.
- .6 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

2.4 BOND COAT

- .1 Dry set cement mortar: to ANSI A108/A118/A136.1
- .2 Organic adhesive: Type 1 to ANSI A108/A118/A136.1.
- .3 Latex Cement mortar: to ANSI A108/A118/A136.1, two-component universal dry-set mortar.
- .4 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:
 - .4 Compressive Strength: 246 kPa.
 - .5 Bond Strength: 53 kPa.
 - .6 Water Absorption: 4.0% Max.
 - .7 Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.
 - .8 Smoke Contribution Factor: 0.
 - .9 Flame Contribution Factor: 0.
 - .10 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
- .5 Chemical-Resistant Bond Coat:
 - .1 Epoxy Resin Type: ANSI A118.3.
 - .2 Furan Resin Type: ANSI A118.5.

2.5 GROUT

- .1 Colouring Pigments:
 - .3 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979/C979M.
 - .4 Colouring pigments to be added to grout by manufacturer.
 - .5 Job coloured grout are not acceptable.
 - .6 Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.
 - .7 Final colour selection by Departmental Representative.
- .2 Cement Grout: to ANSI A108/A118/A136.1.
 - .8 Use one part white cement to one part white sand passing a number 30 screen.
- .3 Commercial Cement Grout: to ANSI A108/A118/A136.1
- .4 Dry-Set Grout: to ANSI A108/A118/A136.1
- .5 Latex Cement Grout: to ANSI A108/A118/A136.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for floors with polished tiles commercial tile grout.
- .6 Chemical-Resistant Grout:
 - .1 Epoxy grout: to ANSI A108/A118/A136.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
 - .2 Furan grout: to ANSI A108/A118/A136.1.

2.6 ACCESSORIES

- .1 Uncoupling Membrane: polyethylene membrane, grid pattern, 3 mm thick.
 - .1 Standard of Acceptance: Ditra as manufactured by Schluter Systems (Canada) Inc.

.2 Cleavage plane: polyethylene film.

.3 Transition Strips:

Standard of Acceptance:

.1 TS-1 Transition: Ceramic Tile to Ceramic Tile

- .1 Schluter Systems (Canada) Inc.
- .2 Style: Schiene
- .3 Width: 25 mm wide
- .4 Finish: (AE) Satin Anodized Aluminum

.2 TS-2 Ceramic Tile to Concrete

- .1 Schluter Systems (Canada) Inc.
- .2 Style: as recommended by tile supplier. (AODA compliant RENO-U)
- .3 Finish: (AE) Satin Anodized Aluminum

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.4 **Areas to receive tile:** install CPD Cipadeck Cure & Seal WB (Water Base).

.5 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

- .1 Sealants: maximum VOC limit 250 g/L to SCAQMD Rule 1168.

2.7 MIXES

- .1 Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- .2 Add materials, water, and additives in accurate proportions.
- .3 Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

2.8 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

- .1 Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

- .1 Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - .2 Tile floors installed with thin-set mortar: Prepare concrete substrates in compliance with surface finish requirements in ANSI A108.01 for installations indicated.
 - .1 Substrates with steel trowel finish: mechanically scarify to achieve concrete surface profile (CSP) in accordance with thin-set mortar manufacturer's written recommendations.
 - .2 Remove protrusions, bumps, and ridges by sanding or grinding.
 - .3 Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - .4 Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Consultant.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

- .1 Prepare substrate in accordance with manufacturer's recommendations.
- .2 Backerboard: fill joints and corners with dry set mortar embedded on 50 mm wide fibreglass tape in accordance with manufacturer's instructions.
- .3 Blending: For tile exhibiting colour variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colours as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- .4 After pouring of concrete floor slabs and before sawcutting of control joints in slab, coordinate slab control joint locations on site with slab sawcutter, tiling subtrade, Consultant and owner's representative.
 - .1 Dry-lay tile pattern with runs of tile from production run of tile that will be installed in order to coordinate joint locations in ceramic tile and concrete substrate.

3.4 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
 - .2 Apply tile or backing coats to clean and sound surfaces.
 - .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
 - .4 Maximum surface tolerance 1:800.
 - .5 Lay out tiles so perimeter tiles are minimum 1/2 size.
 - .6 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
 - .7 Install divider strips at junction of tile flooring and dissimilar materials.
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- .8 Make control joints as indicated on the drawings.
 - .1 Make joint width same as tile joints.
 - .2 Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealants.
- .9 Allow minimum 24 hours after installation of tiles, before grouting.
- .10 Clean installed tile surfaces after installation and grouting cured.

3.5 FLOOR TILE

- .1 Install in accordance with TTMAC detail 311F detail C, and 329LFT.
 - .1 Install uncoupling membrane under full extent of floor tile areas.
- .2 Install control joints in accordance with TTMAC detail 301MJ.
 - .1 Locate tile joints in accordance with coordinated substrate joints.
 - .2 Fill joint with sealant to Section 07 92 00 – Joint Sealants.

3.6 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply in accordance with manufacturer's instructions.

3.7 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.8 CLEANING AND PROTECTING

- .1 Cleaning: On completion of placement and grouting, clean tile surfaces so they are free of foreign matter.
 - .1 Remove grout residue from tile as soon as possible.
 - .2 Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
- .2 Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile floors.
- .3 Prohibit foot and wheel traffic from tiled floors for at least 14 days after grouting is completed.
- .4 Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION